DATA QUALITY ASSURANCE REVIEW

SITE NAME Amarillo Phosphine Incident

WORK ORDER NUMBER 20406.012.001.1065.01 TDD NUMBER 1/WESTON-042-17-009

PROJECT NUMBER _____ SDG NUMBER 1703278

Weston Solutions, Inc. (WESTON®) has completed a QA review for Work Order Number 20406.012.001.1065.01, SDG No. 1703278, Amarillo Phosphine Incident. Ten samples were analyzed for phosphine by ALS Environmental. The sample numbers are listed below.

SAMPLE NUMBERS

PH3-BR1-28012017-81	PH3-BR2-28012017-81	PH3-BR3-28012017-81
PH3-BTH1-28012017-81	PH3-BTH1-28012017-82	PH3-BTH2-28012017-81
PH3-FB-28012017-85	PH3-HVAC-28012017-81	PH3-KTCH-28012017-81
PH3-LAUN-28012017-81		

This data package was validated to determine if Quality Control (QC) specifications were achieved, following *USEPA National Functional Guidelines for Superfund Organic Methods Data Review* (September, 2016), *USEPA National Functional Guidelines for Inorganic Superfund Data Review* (September, 2016), *USEPA Contract Laboratory Program National Functional Guidelines for Chlorinated Dioxin/Furan Data Review* (September, 2011), *Quality Assurance/Quality Control Guidance for Removal Activities* (April, 1990), and/or the Regional Protocol for Holding Times, Blanks, and VOA Preservation (April 13, 1989). Specific data qualifications are listed in the following discussion.

REVIEWER Gloria J. Switalski DATE February 16, 2017

Data Qualifiers

Data Qualifier Definitions were supplied by the Office of Solid Waste and Emergency Response (September 1989) and are included in the Functional Guidelines. Data qualifiers may be combined (UJ, QJ) with the corresponding combination of meanings. Additional qualifier may be added to provide additional, more specific information (JL, UB, QJK), modifying the meaning of the primary qualifier. Addition qualifiers utilized by WESTON are H, L, K, B, Q, and D.

U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation or detection limit, which has been adjusted for sample weight/sample volume, extraction volume, percent solids, sample dilution or other analysis specific parameters.

An additional qualifier, "B", may be appended to indicate that while the analyte was detected in the sample, the presence of the analyte may be attributable to blank contamination and the analyte is therefore considered undetected with the sample detection or quantitation limit for the analyte being elevated.

J - The analyte was analyzed for, but the associated numerical value may not be consistent with the amount actually present in the environmental sample or may not be consistent with the sample detection or quantitation limit. The value is an estimated quantity. The data should be seriously considered for decision-making and are usable for many purposes.

An additional qualifier will be appended to the "J" qualifier that indicates the bias in the reported results:

L Low bias

H High bias

K Unknown bias

Q The reported concentration is less than the sample quantitation limit for the specific analyte in the sample.

The L and H qualifier will only be employed when a single qualification is required. When more than one quality control parameter affects the analytical result and a conflict results in assigning a bias, the result will be flagged JK.

R - Quality Control indicates that data are unusable for all purposes. The analyte was analyzed for, but the presence or absence of the analyte has not been verified. Resampling and reanalysis are necessary for verification to confirm or deny the presence of an analyte.

N - The analysis indicates the presence of analyte for which there is presumptive evidence to make a "tentative identification".

PHOSPHINE DATA EVALUATION

1. Analytical Method:

Samples were prepared and analyzed for phosphine using the procedures specified in **OSHA Method 1003, modified**.

2. Holding Times:

All samples met established holding time criteria of 17 days for phosphine. No qualifications are placed on the data.

3. Initial Calibration:

Phosphorus initial calibration included a blank and at two standards. The initial calibration correlation coefficients for phosphorus were greater than 0.995. The initial calibration verification results fell within the control limits of 85% to 115% of the true value. No qualifications are placed on the data.

4. Continuing Calibration:

All phosphorus results fell within the control limits of 85% to 115% of the true value. No qualifications are placed on the data.

5. Blanks:

A. Laboratory Blanks:

Phosphorus was not detected in the calibration and laboratory reagent blanks. No qualifications are placed on the data. Phosphorus (6.15 µg/sample) was detected above the reporting limit (RL) in the laboratory media blank (LMB). Therefore, detected phosphine results in all samples are qualified as estimated, J+ biased high.

B. Field Blanks:

Field blank sample, PH3-FB-28012017-85, had a detection for phosphine (6.6 µg/sample). No qualifications are placed on the data since results were already qualified due to LMB action noted above.

6. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD):

The recoveries and relative percent difference (RPD) values for the LCS/LCSD were within the established control limits. No qualifications are placed on the data.

7. Duplicate Sample Analysis:

A. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis:

No sample from this analytical package underwent MS/MSD since these were air samples. No qualifications are placed on the data.

B. Field Duplicate Analysis:

The following sample pair was submitted as field duplicates for the air matrix: PH3-BTH1-28012017-81/PH3-BTH1-28012017-82. The RPD values for the field duplicate sample analysis were within the QC criteria of less than 50% for air samples for concentrations greater than five times the method limit (RL). For sample concentrations less than five times the RL, the absolute difference between the samples is less than 3.5 times the RL for air samples. No qualifications are placed on the data.

8. Spiked Sample Analysis:

No sample from this analytical package underwent MS/MSD since these were air samples. No qualifications are placed on the data.

9. Sample Quantitation and Reporting Limits:

All samples for phosphine were correctly calculated

10. Laboratory Contact

The laboratory was contacted on February 13, 2017 regarding phosphorus contamination in the LMB. An acceptance response was received on February 15, 2017.

11. Overall Assessment:

Detected phosphine results were estimated with a high bias due to laboratory blank action.

The analytical data is acceptable for use with the qualifications listed above.